

OSHA  
DOCKET H-122

SUMMARY OF  
TESTIMONY  
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### BACKGROUND

Our testimony will try to address and summarize our input contained in written comments concerning various aspects of the Proposed Rule on indoor air quality.

We hope to present the testimony in as succinct a manner as possible and if workable from a logistical standpoint, may try to use slides.

We have tried to outline the material that we hope to cover in this testimony.

TESTIMONY

- Credentials and background of the panel reviewed and discussed.

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- Philip Morris U.S.A. maintains that:

(1) Smokers and nonsmokers can be reasonably accommodated in the indoor environment.

(2) Indoor smoking should be addressed as a part of an overall, comprehensive approach to the indoor environment.

(3) The scientific data and actual building investigations support an overall approach to IAQ.

- The company approaches the IAQ issue from the perspective of a user of approximately 1,000 buildings, from the perspective of a major domestic employer of more than 150,000 employees, and also from the perspective of a manufacturer of cigarettes.

- IAQ is an important issue that is properly addressed through the Building Systems Approach -- attention to the design, maintenance and proper operation of a building's HVAC system.
- Indoor smoking and ETS may be addressed in ways not considered by OSHA, i.e., adequate ventilation, simple physical separation of smokers and nonsmokers and by pressure zoning in buildings that permit smoking.
- Management of exposures to ETS by existing options offers alternatives to the enclosed, separately exhausted and negatively pressurized smoking room required by OSHA's Proposed Rule.
- Available options are able to provide accommodation of both smokers and nonsmokers, while at the same time providing flexibility for employers and employees.
- Each workplace is unique. OSHA should recognize that workplaces are infinitely varied and that smoking policies should address the unique features of individual workplace. The best approach is to allow employers and employees to develop and implement the solution that is best for their particular workplace.

- Reasonable accommodation of smokers and nonsmokers effectively addresses workplace smoking issues without extensive federal regulation of workplace smoking.

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- Improved overall indoor air quality (IAQ) is an achievable goal through a variety of basic engineering principles and technologies, usually at low cost.
- Energy-saving building techniques of the '70s and '80s, lower ventilation rates, and the use of more synthetic materials in the modern office created conditions which diminished indoor air quality.
- Future involvement of the building management may be practical and useful to ensure that cost-cutting measures aren't reducing air quality in a tenant's space and that tenant-proposed smoking accommodation can be achieved.
- Moreover, the last two decades have demonstrated that engineering and advanced technology, with an emphasis on proper ventilation, can provide improved IAQ for all buildings, whether or not smoking occurs.

- Available solutions range from restoring air handling systems to their original potential -- to extending their capabilities with advanced technologies.
- By addressing overall indoor air quality, decisions about accommodating indoor smoking can be made on the basis of what may be appropriate for a particular workplace, rather than upon severe, restrictive federal regulation.
- Buildings vary dramatically in size, design, building materials, age, geographic location and the preferences of their occupants. As a result, numerous technical options exist to complement any smoking policy -- in any workplace environment. Companies frequently prefer to utilize existing options to accommodate smokers while being responsive to the wishes of nonsmokers. Engineering and technology provide the tools to do both: improve indoor air quality and accommodate smoking.
- Data from building investigations indicate that occupants in buildings with adequate ventilation generally have few complaints about indoor air quality or smoking.
- While smoking is often perceived as the cause of poor indoor air quality, visible accumulation of tobacco smoke is usually

evidence of a more pervasive problem -- inadequate ventilation.

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- Because one-third of our time is spent at work, a productive workplace should recognize individuals' varying requirements for a reasonable degree of flexibility and control over technical factors while accommodating personal preferences.
- In the 1980s, the expansion of the white collar workforce led to extensive use of ergonomic designs in furniture, equipment and office planning. Whether it is the ability to adjust their chairs for pitch and height, or to block out unwanted sounds, or to select from more than one possible light source, giving employees a choice has come to play a larger role in managing today's complex workplace effectively.
- Reasonable approaches recognize and respect the diversity of all employees while being compatible with accepted customs, individual preferences, work requirements, local culture and applicable laws.
- Each workplace should be given the ability to develop a policy which meets its requirements. Smoking accommodation is an

achievable goal that integrates people, policy and practical technology.

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- Reasonable accommodation of smokers and nonsmokers is not precluded by the agency actions and publications of the U.S. EPA.
- We urge OSHA to review and apply objective scientific data in fashioning workplace IAQ rules that allow for reasonable accommodation of smokers and nonsmokers.
- We urge a careful evaluation of actual workplace ETS exposure data, particularly several of the most recent studies.

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- OSHA's regulatory text does simply not provide a basis for regulating indoor smoking in the manner set forth in its Proposed Rule. There are reasonable options for dealing with indoor smoking as a part of overall indoor air quality that are supported by, and embraced by, the scientific data.



- OSHA'S Proposed Rule on IAQ recognizes the importance of the proper design, maintenance, and operation of a building's heating, ventilation and air conditioning (HVAC) system.
- The Proposed Rule, however, falls short of providing a comprehensive approach to workplace IAQ.
- Concerning OSHA's Proposed Rule on indoor air quality, our written submission maintains:

(1) Indoor air quality problems are most often associated with inadequate ventilation system performance;

(2) Complaints regarding unacceptable indoor air quality (usually associated with symptoms of irritation, annoyance and discomfort) cannot, as a rule, be traced directly to specific airborne substances or to specific levels of exposure; and

(3) Remediation and mitigation of poor indoor air quality, and the attainment and maintenance of acceptable indoor air quality, depend upon the correct design, operation and maintenance of a building's ventilation system.

- Data compiled in our written submission confirms that inadequate ventilation is associated with approximately one-half of all complaints in sick-building investigations.
- Data contained in databases of "sick-building" investigations were summarized and submitted to the docket on OSHA's 1991 Request for Information on Indoor Air Quality (RFI). Surprisingly, however, with one exception, the Proposed Rule fails to reference or discuss any of these workplace IAQ investigations.
- One of the most notable compilations of sick-building investigations was undertaken by NIOSH, referenced in the OSHA Proposed Rule. [59 FR 16003 and 16010]

(1) Inadequate ventilation was identified as a primary problem in fifty-two percent (52%) of the 484 building investigations in the NIOSH database.

(2) Inside contamination was identifiable in only seventeen percent (17%) of all buildings; unknown sources were identified in twelve percent (12%) of the buildings; outside contamination was identifiable in eleven percent (11%) of buildings; microbiological contaminants were identified in

five percent (5%); and building materials and furnishings were identified as problems in three percent (3%) of the buildings.

- Other data on building and workplace investigations that were neither referenced nor discussed in the Proposed Rule report similar results.
- For example, a database of 1,362 building investigations has been compiled by Health and Welfare Canada.

(1) Inadequate ventilation was identified as the primary problem in fifty-two percent (52%) of the buildings investigated.

(2) Specific indoor air contaminants were identified in only twelve percent (12%) of the investigations.

(3) Outdoor contamination was identified in nine percent (9%) of the buildings; building materials were identified as problematic in two percent (2%) of the buildings; and biological contaminants were identified in two-fifths of a percent (.4%) of the buildings investigated.

(4) No problem was identified in twenty-four percent (24%) of the buildings. [Exs. 3-1073, 3-1074]

- Public Works Canada, another Canadian federal agency, investigated 30 buildings for IAQ complaints between 1987 and 1990. Ventilation-related problems were reported in one-half of the buildings. [Ex. 3-1073]
- TDSA Ltd. have compiled data on 408 building investigations conducted in the U.S. and Canada. [Ex. 3-1073] The results have been analyzed and computerized in what is called the "Building Performance Database." Ventilation-related inadequacies were directly associated with IAQ complaints in 49 percent of the buildings catalogued in the Database.
- A private, U.S.-based IAQ monitoring firm conducted 412 building investigations from 1981 through 1988. [Ex. 3-1053] Ventilation problems were associated with complaints in 62 percent of the buildings investigated; bacterial and fungal contamination was reported in nearly a third of all buildings investigated.
- A 1989 report by Dr. James Woods assessed 30 cases of "problem buildings" investigated by the Honeywell Corporation since 1986.

(1) Woods' research indicates that 75 percent of the buildings investigated had inadequate outdoor supply air intake.

(2) Similarly, 75 percent of the buildings exhibited inadequate air distribution to occupied spaces, and 65 percent of the buildings suffered from inadequate HVAC maintenance. [Exs. 3-745, 3-1074]

- Kim (1990) summarized 105 investigations of problem buildings undertaken by Clayton Environmental Consultants, a IAQ monitoring firm in the U.S. [Ex. 3-505], and wrote:

In a survey of 105 buildings, Clayton found that 53 percent had [HVAC] maintenance problems, 49 percent had operational problems (such as improper handling of control equipment), and 33 percent had design problems. Mechanical engineers evaluated the HVAC systems in 70 of the buildings, in which they found that 75 percent had maintenance problems, 70 percent had operational problems, and 47 percent had design problems. Of the 105 buildings, 95 were sampled for contaminants. Of these, 28 were found to have problem levels of microbial contaminants, 26 had volatile organic compounds and 13 combustion products. [Ex. 3-1074]

- Freund, et al., from the New Jersey Department of Health, evaluated 221 complaint buildings in that state and reported that 43 percent were associated with inadequate ventilation. [Ex. 3-1053]

- The Oregon Department of Resources submitted results of 36 state office building investigations to the OSHA RFI docket. [Ex. 3-1157]. The respondents observed:

Thirty-six state office buildings were examined for IAQ problems. Significant problems were found in 16 buildings. Many of the problems were associated with inadequate ventilation and high levels of carbon dioxide . . . [S]tudies in Oregon have shown that when outside make-up air falls below 15 cfm, complaints increase.

- In a submission to OSHA by the Local 12/Occupational Illness Support Group of the U.S. Department of Labor, the authors report that:

Inadequate ventilation is the primary cause of most of the indoor air quality problems. . . . This is a result of the Department's inability to maintain adequate amounts of outside air. [Ex. 3-1017]

- We have spent time reviewing the data from actual building investigations because this "available evidence" was largely ignored by OSHA.
- In our view, the published data from a number of building investigation databases submitted to OSHA, including data from the federal government, reveal that deficiencies in ventilation have been directly related to IAQ complaints in approximately one-half or more of all reported cases.

- HVAC-related problems have been associated with complaints in as many as 75 percent of the reported sick-building investigations.
- One need only look at the EPA to see the importance of these sick-building investigations.
- On December 23, 1993, judgment was entered in favor of five EPA employees who had alleged that poor indoor air quality at the EPA's headquarters caused them to suffer a number of health problems, including severe and permanent neurological, immunological, respiratory, and/or psychological injuries.
- The claims of injury in the lawsuit against EPA were based upon HVAC design, operation and maintenance practices. While poor IAQ and respiratory problems were at issue in the case, there were no allegations that exposure to ETS was to blame for any of the plaintiffs' injuries.

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- IAQ complaints and sick-buildings generally cannot be associated with specific substances.

- Although the Proposed Rule correctly contends that correlations between specific complaints and specific substance exposures in indoor air quality investigations are rare, it fails to cite relevant support from materials submitted to OSHA in the RFI docket. [59 FR 15969] A number of comments submitted to the docket substantiate that claim.
- The Atlantic Richfield Company (ARCO) reports that, in their experience, "when monitoring has been conducted, hazardous contaminants have either not been detected, or they are present in concentrations far below those known to present health hazards." [Ex. 3-448]
- The submission from Organization Resources Counselors states that:

Companies report monitoring for formaldehyde, total and respirable particulates, total organics. . . . In almost all cases where monitoring was done for specific contaminants, results were either below the level of detection, or were below OSHA Permissible Exposure Limits. [Ex. 3-1084]

- Similarly, CanTox, Inc. reports that:

More than half (63 percent) of the compounds detected in indoor air could not be attributed to a definite source. The largest group with known sources were found to have multiple



sources and their presence could not be exclusively attributed to one specific source. This clearly has significant implications with respect to attempting to use source control to maintain indoor air quality. [Ex. 3-1180]

- The American Federation of Government Employees (AFGE) of the AFL-CIO reports that "unfortunately, despite the substantial evidence linking poor indoor air quality to AFGE members' adverse health effects, AFGE is unable to obtain the data needed to make the causal connection between specific contaminants and those adverse health effects." [Ex. 3-529]
- United Technologies reports that, "based on our experience in occupational settings and knowledge of the professional literature, there are only very weak data that directly relate specific chemicals to IAQ." [Ex. 3-651]
- TDSA Ltd., after citing four studies, report that:

The correlation between symptoms presented in IAQ complaints and causative agents is weak because exposure to many different types of contaminants in indoor air, originating from both indoor and outdoor sources, has been shown to result in similar health and comfort complaints. The presence of pollutants in indoor air, combined with thermal comfort parameters of temperature and humidity, and other building characteristics, such as ventilation, lighting, noise and occupant density and activities, make it difficult to isolate the causative agent in IAQ-related health and comfort complaints. [Ex. 3-1073]

- The American Industrial Hygiene Association (AIHA) notes that, based on their experience:

In most IAQ complaints, symptoms are non-specific and could be caused by a variety of factors. Correlations can be found where there is a consistent spacial and temporal relationship and the complaint can be resolved by changing a building condition [e.g., ventilation system, maintenance procedures, etc.]. Biological contamination may sometimes be distinguished by a pattern of allergy symptoms. [Ex. 3-735]

- The Building Performance Database compiled by TDSA Ltd. provides data on airborne substance monitoring from over 200 sick-building investigations.

(1) Average recorded levels of carbon dioxide, carbon monoxide, respirable suspended particulates, formaldehyde, airborne fungi and bacteria, nicotine, temperature and humidity are all within parameters of "acceptable" exposure.

(2) Nevertheless, the buildings from which the monitoring results arose were deemed "sick."

(3) The authors conclude: "In general, IAQ investigations of white collar workplaces have found indoor concentrations of measured substances far below occupational exposure levels." [Ex. 3-1073]

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- Given the foregoing, it is not surprising that the sick-building databases submitted to the OSHA RFI Docket indicate that ETS is associated with complaints in only two to five percent of all investigations; the data do not support OSHA's attempt to separate ETS from general IAQ issues
- OSHA's Proposed Rule conspicuously, and we submit -- incorrectly, omits any discussion of ETS within the context of the discussion on general IAQ and the identification of specific causes in sick-building investigations.
- The major databases on sick-building syndrome submitted to the OSHA RFI docket clearly indicate that tobacco smoke is rarely the underlying cause of complaints about poor indoor air quality.
- In HBI's database of 412 sick-buildings, ETS was reported to be a significant contributor to complaints in only 3 percent of all buildings investigated. [Ex. 3-1053]
- In the sick-building database compiled by TDSA Ltd., smoking was implicated as a major contributor to complaints in only 12

of 408 (less than 3 percent) of the buildings surveyed. [Ex. 3-1073]

- NIOSH investigated more than 200 sick-buildings through 1984 and reported that tobacco smoke was a source of claimed discomfort in only 2 percent of the buildings investigated. [Ex. 3-1074]
- In a summary of 94 building studies by government investigators from Health and Welfare Canada, complaints were attributable to indoor constituents such as photocopy machine emissions and ETS in only 5 percent of the buildings investigated. [Ex. 3-1074]
- Professor Alan Hedge of Columbia University submitted the results of his study on 4,479 office workers from 27 air-conditioned offices to the RFI docket. [Ex. 3-955] He examined the potential impact of smoking and smoking policies on reports of sick-building syndrome.

(1) Hedge reported that sick-building complaints could not be correlated with levels of ETS constituents in the indoor air.

(2) Workers in smoking-prohibited buildings, on average, reported more symptoms than workers in buildings with restricted smoking policies.

- The submission to the OSHA RFI docket by Theodor D. Sterling and Associates Ltd. stated: "Removing the smoker entirely, then, would not affect health and comfort problems in 95 to 98 percent of sick-buildings." [Ex. 3-1073]
- The shortcomings of OSHA's Proposed Rule are due in part to OSHA's failure to examine and evaluate the actual data on problem buildings and OSHA's failure to look at indoor smoking as a part of general IAQ.

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- Generally speaking, ventilation is the mitigation procedure for poor IAQ.
- The data on indoor smoking discussed above are derived from databases that support the contention that the primary cause of complaints about poor indoor air quality is inadequate ventilation.

- OSHA's RFI docket is replete with information which confirms the role of adequate ventilation in attaining good indoor air quality.

(1) For example, the New York State Building and Construction Trades Council reports that, based on their experience, "the average office setting exposes workers to contaminants from machines, carpets, paints, glues, and fungi. These contaminants mix with the air the workers breathe on a daily basis and affect a person's well-being. Proper ventilation has been shown to provide a proven antidote to these problems." [Ex. 3-732]

(2) IAQ investigators from the American Federation of State, County and Municipal Employees (AFSCME) Local 12 from the University of Iowa Employees Union report that "we have found that insufficient fresh air flow is most often the cause of a number of symptoms, including coughing, skin and eye irritations, headaches and upper respiratory infections . . . [I]ndoor air quality problems can be treated with little effort and expense by improving or upgrading inadequate ventilation systems to increase fresh air flow in the workplace." [Ex. 3-1171]

(3) The State of New Jersey Health Department's investigation of 221 complaint buildings revealed that over 43 percent of all cases involved inadequate ventilation. In cases where abatement recommendations were made, the recommended strategy consisted of increased maintenance, repair, adjustment or redesign of the HVAC system. Eighty-four percent of the cases where such abatement steps were implemented reported the elimination of IAQ complaints. [Ex. 3-1053]

(4) Poor indoor air quality in schools, where indoor smoking is generally not an issue, has recently been identified as a problem area.

(a) In 1989, Helsing and co-workers reported the results of an IAQ investigation in a school. They reported that "there was an insufficient fresh air supply to some classrooms and a large percentage of students exhibited classic symptoms of sick-building syndrome, i.e., headache, eye burning, fatigue."

(b) Investigations by Hanssen (1987) and Beller (1989) reported that low air exchange rates in combination with installation of new building materials

were the main cause of complaints in the schools that they investigated.

(c) Helsing, et al. concluded: "Correcting the ventilation problems resulted in reduction of symptoms to a level approximately equal to that of students in other schools in the county." [Ex. 3-1074]

(5) In 1989, Collett and Sterling examined the effect of ventilation retrofits on perceived health and comfort complaints by building occupants. For the buildings in which major retrofits were undertaken, perceptions of indoor air quality improved in seven of nine categories surveyed. [Ex. 3-1073]

(6) Health officials who investigated and compiled the Canadian sick-building database (Health and Welfare Canada) observed that recommendations for improvements in ventilation and thermal comfort had been made in 60 percent of the 1,400 buildings investigated, while control of specific pollutants was recommended in only 20 percent of all cases. [Ex. 3-1074]

(7) In 1984, a committee on sick-building syndrome from the WHO's Europe Working Group on Indoor Air Research concluded that an increase in outdoor air supply rates,



together with improvements in air distribution, yielded satisfactory results in remediating sick-building syndrome.  
[Ex. 3-188]

(8) The Ohio Civil Service Employees Association, after reviewing three indoor air quality incidents in Ohio, endorsed the ventilation adequate "as a vital component in solving and preventing persistent health and safety problems related to indoor air in the workplace." [Ex. 3-398]

(9) Steven B. Hayward of the State of California Department of Health Services recommends adoption of a minimum ventilation standard similar to that currently in effect as a Cal/OSHA regulation. The Cal/OSHA standard requires that a minimum supply of outdoor air specified in the State Building Standard Code be provided, and that the HVAC system be operated continuously, inspected regularly, and properly maintained. [Ex. 3-17]

- Data in OSHA's docket clearly indicate that procedures designated to insure adequate ventilation will be, in most cases, determinative of good indoor air quality, whether or not indoor smoking is allowed.

- Respondents to OSHA's RFI in indoor air quality also advised OSHA that adequate ventilation is the preferred method for controlling exposures to radon, VOCs, CO, CO<sub>2</sub>, bioaerosols and ETS. [Exs. 3-500, 3-61, 3-1053]
- The U.S. Department of Labor's own Occupational Illness Support Group states that ETS and radon "have seldom been the source of employee complaints of poor indoor air quality. With properly designed and properly operated ventilation systems, exposure to radon and passive smoke can be minimized." [emphasis added] [Ex. 3-1017]

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- OSHA's Proposed Rule fails to address other environmental variables unrelated to IAQ that play a role in worker complaints about health and comfort.
- The Proposed Rule dismisses the possibility that factors unrelated to IAQ, e.g., temperature, lighting, stress, workload, etc., may play a role in worker perception about IAQ.

- OSHA discounts the potential psychological element in worker complaints by arguing that complaints "are unlikely to be due to mass psychogenic illness." [59 FR 15970] OSHA misses the point.
- A number of studies in the published literature that are contained in OSHA's RFI docket indicate that lighting, temperature, humidity, job satisfaction, job stress and ergonomics are factors that influence worker perceptions about IAQ. [Ex. 3-1073]
- In a SBS study in Denmark, Skov and colleagues examined sick-building syndrome reports among 4,369 office workers. Their research indicated that indoor climate perception was strongly related to the prevalence of SBS symptoms. Lifestyle factors were only weakly associated with the reporting of symptoms. [Ex. 3-1074]
- A 1991 report by Hawkins and Wang ranked a number of variables related to self-reported symptoms of sick-building syndrome. Those variables included: "humidity," "satisfaction with work," "active smoking," "gender," "exposure to ETS," "office light," and "doing professional work." They concluded:

Building Sickness Score was associated with many factors. Sick building syndrome symptoms are influenced by multiple variables of which the environmental factor of humidity and the psychological factors of work, sex, and occupation are important. [Ex. 3-1074]

- Based on one of his own studies, Hedge reports that although ventilation has an important effect on indoor air quality, reports from workers in 46 office buildings in the United Kingdom indicate that complaints are even more strongly influenced by a number of personal and occupational factors such as gender, job stress, job satisfaction and computer use. [Ex. 3-955]
- The American Industrial Hygiene Association (AIHA) reports that "psychosocial and physical stresses are certainly potential causes of some IAQ complaints and should always be considered in any investigation." This opinion is based on the experience of AIHA members. [Ex. 3-735]
- Citing two studies, Eagle Environmental Health reports that "thermal discomfort, unpleasant odors, lack of air movement, insufficient lighting, and excessive noise are also indicated in IAQ investigations. Job-related stress many also manifest itself in IAQ complaints." [emphasis added] [Ex. 3-500]

- The National Energy Management Institute (NEMI) reports:

The NEMI experience has revealed that there are a variety of factors which can interact to cause a worker to display indoor environmental health-related problems. These factors may actually be the primary cause or may exacerbate an IAQ problem condition. Temperature, temperature change, humidity, air velocity, light levels, noise as well as psycho-social factors should always be considered in presenting and investigating IAQ problems. [Ex. 3-1183]

- Even the U.S. EPA recognizes that factors related to SBS are multi-factorial, involving combined environmental and psycho-social stressors. [Ex. 3-1075, Attachment H] Citing the World Health Organization (1986), the EPA states:

Buildings at highest risk [of SBS] appear to be new or recently remodeled buildings with tight envelopes, especially those with large ventilation systems that depend on limited fresh air sources. Improper ventilation, thermal conditions, and occupant lack of control over climatic and working conditions are other factors that may increase the likelihood of a building being linked to sick-building syndrome. [Ex. 3-1075, Attachment E]

- A NIOSH psychologist, Dr. Michael Colligan, has offered an explanation for the role of such factors in perceptions about IAQ. [Ex. 3-1074] He writes:

It appears then, that the individual is sensitive to fluctuations in the functioning of the autonomic nervous system. When

perceived changes in his subjective state are understandable, e.g., 'I have an allergy,' 'I've been under a lot of pressure to meet a deadline,' 'I'm worried about my teenager,' an individual can initiate various coping strategies to deal with the causes. When the origins of the experienced distress are vague or unclear, however, an individual starts searching around for salient cues. If the environment provides a plausible cause in the form of a pungent odor or dense, stuffy air, then an individual can conclude, rightly or wrongly, that the poor quality of the environment is responsible for his physical and psychological discomfort. Notice that this process can occur independently of any specific toxic effects the environment might have on the individual and irrespective of the 'real' cause of the autonomic arousal. All that is required is that individual experience autonomic arousal in response to a subtle or unidentified stressor or combination of stressors. Cues provided by the environment in the form of noxious odors, visually detectable particulates or dust, or humid, stuffy air, may suggest to an individual that his discomfort is a toxic response to an airborne pollutant. That environment then becomes a source of threat to the individual, which in turn may generate more autonomic arousal and anxiety.

- Dr. Colligan's observations also provide an explanation for the role of environmental factors in perceptions about complaints related to ETS in the workplace.
- Because it is readily identifiable, ETS is often initially blamed for IAQ problems (yet after investigation, reported exposures to ETS are directly associated with complaints in only two to five percent (2-5%) of sick-buildings).

- If individuals are "stressed" by their work environment (influenced by such diverse factors as temperature, humidity, air movement, ergonomics, workload, personal problems, etc.), the mere visibility of ETS may provide a cue for a complaint.
- Recent research by Winneke and colleagues indicates that an individual with a dislike of ETS will more readily, under actual exposure conditions, respond with annoyance symptoms. [Ex. 3-1074]
- Researchers from the Illinois Institute of Technology also addressed the issue of nonsmoker perception of annoyance and irritation from ETS exposures.

(1) The study, involving over 250 subjects, reported that visual contact with a smoker increased the magnitude of adverse response to ETS among selected nonsmokers.

(2) The authors suggest that their conclusion "provides an inexpensive strategy of reducing complaints associated with ETS: eliminate visual contact between smokers and nonsmokers." [Ex. 3-31]

- Precise quantitation of psychological variables and perceptions of comfort within the context of complaints about IAQ is extremely difficult.
- The influence of those environmental variables upon IAQ complaints must be recognized and considered in a comprehensive approach to IAQ -- and that is precisely one of the reasons why OSHA should proceed with its rulemaking based on an overall approach to IAQ.

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- OSHA's Proposed Rule does not establish a significant risk of material impairment from IAQ problems in the nonindustrial workplace.
- Data are available which may well establish significant risk from Sick-Building Syndrome and Building-Related Illnesses in the workplace, but the Proposed Rule does not reference or document "the best available evidence" in this issue.
- Despite a number of submissions to the OSHA RFI docket on IAQ that document specific examples and studies on sick-building syndrome (SBS) and building-related illness (BRI) (e.g., Exs. 3-500, 3-933, 3-955, 3-1053, 3-1054, 3-1073, 3-1074, 3-1183,



3-1185), the Proposed Rule provides only a cursory examination of the available data on the risks of poor, overall IAQ. [59 FR 15970-73]

- Specific case reports document hundreds of instances of Sick-Building Syndrome and Building-Related Illnesses that often result in occupant deaths or debilitating illnesses. Tables in our written submission chart and document these cases.
- The 287 specific cases of SBS/BRI which we documented were not in any way associated with ETS; in many of the buildings, smoking was prohibited altogether.
- Studies and reports of SBS and BRI document thousands of cases of specific diseases and illnesses, yet OSHA only acknowledges the possibility of such instances. Instead, OSHA provides a theoretical, quantitative model that estimates the risk of headaches and upper respiratory symptoms from poor IAQ. [59 FR 15997]
- The model does not include instances of death and serious illness due to poor IAQ. OSHA's model projects potential cases of dry eyes, stuffy nose and headache, but it does not satisfactorily demonstrate a significant risk of material health impairment from IAQ.

- Contrary to OSHA's modeling approach, data regarding mortality and morbidity due to poor IAQ in the nonindustrial workplace, are available (and were made available to OSHA in submissions to the RFI docket on IAQ).
- In our view, OSHA has not presented the "best available evidence" to support its own position on IAQ and indeed has not even presented the "best available evidence" from its own docket.

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- OSHA separates ETS from its Proposed Rule on IAQ by claiming that ventilation procedures cannot address ETS.
- OSHA's position is groundless, contrary to both theory and practice, and is dictated by a policy dedicated to the elimination of smoking.
- OSHA's Proposed Rule on IAQ addresses common indoor air contaminants such as microbiologicals, dusts, chemicals and by-products of human metabolism through provisions designed to ensure the proper operation and maintenance of ventilation systems.

- Increased ventilation, proper air distribution, and maintenance of a building's heating, ventilation and air-conditioning (HVAC) system effectively serve to dilute and remove such common substances from the indoor air. [59 FR 16003]
- In a total disregard for submissions to the OSHA RFI docket, the published scientific literature and accepted theoretical and practical knowledge about HVAC design and operation, OSHA states that the ventilation approach in its Proposed Rule on IAQ cannot be applied to complaints about, or exposures to, ETS in the workplace. [59 FR 15970, 16003] We disagree.
- OSHA states that "the primary objective of the tobacco smoke provision is to eliminate the nonsmoker's exposure to ETS." [Emphasis added, 59 FR 16016]
- OSHA's Proposed Rule on indoor air quality in work environments, while presenting the outward appearance of a single, comprehensive approach to indoor air quality problems through ventilation, actually constitutes two separate approaches -- one for environmental tobacco smoke, and one for every other potential constituent in indoor air.

- OSHA proposes two separate pathways, one designed to reduce exposures to (and potential risks from) every potential substance occurring in indoor air (except ETS), and another designed to eliminate all exposure to ETS in the workplace.
- According to the Proposed Rule on ETS, the elimination of smoking from the workplace means that it is to be either prohibited entirely or restricted to a separate room that is negatively pressurized and exhausted immediately to the outdoors. [59 FR 16023]
- OSHA's position on indoor smoking and ETS is neither supported nor supportable.
- OSHA states, but does not demonstrate, that ventilation parameters fail to effectively reduce and minimize exposures to ETS. [59 FR 15970, 16003]
- OSHA attempts to justify its position on the nonapplicability of ventilation to ETS with four unsubstantiated remarks in the Proposed Rule, namely:

(1) "Ventilation systems are designed only to remove occupant-generated contaminants, such as carbon dioxide and odors. These types of systems were not designed to dilute

multiple point sources of contaminants that are typically found in non-industrial workplaces." [59 FR 15973]

(a) This statement is not referenced and is in direct contradiction with OSHA's own Proposed Rule for a ventilation-based approach to IAQ problems;

(2) The Proposed Rule also states: "Natural and mechanical ventilation systems are designed primarily to limit the accumulation of products of human respiratory metabolism, and secondarily to limit odor; not to control the byproducts of biomass combustion. Thus, smoking indoors creates air pollution which is not adequately abated by customary ventilation systems." [59 FR 15986]

(a) This statement also is not referenced and is not supported by the scientific literature;

(3) The Proposed Rule further states: "Dilution ventilation offers no protection in those cases where, due to the close proximity to a smoker (e.g., contaminant point source), the nonsmoking employee may be exposed to large amounts of sidestream and exhaled mainstream smoke (ETS). Due to the limitations of general ventilation, the smoke cannot be

removed from the air before reaching the breathing zone of nearby employees." [59 FR 15991]

(a) This passage describes a situation in which a given ventilation system may "short-circuit", i.e., a case in which supply air is removed from the space before it can effectively dilute indoor air constituents.

(b) OSHA does not explain why such an occurrence would apply only to ETS and not to other constituents found in the indoor air.

(c) OSHA does not represent in any way that such situations are common, nor does it provide quantitation of the extent to which individuals are so exposed; and

(4) The Proposed Rule contends: "The carcinogenicity of ETS discounts the use of general ventilation as an engineering control for this contaminant." [59 FR 15991-2]

(a) The claim that ETS is a carcinogen and therefore cannot be addressed by general ventilation contradicts OSHA's own position on permissible exposure limits (PELs) for numerous so-called "carcinogens" in the workplace.

\* \* \* \* \*

- On the question of ventilation, OSHA's Proposed Rule rejects the application of the ventilation rates of an authoritative, national consensus standard on ventilation that was designed to address ETS and other IAQ constituents.
- The Standard, ASHRAE 62-1989, has been incorporated into the nation's major building codes (and is therefore incorporated by reference into OSHA's own Proposed Rule on IAQ).

(1) The ASHRAE consensus Standard has been adopted by numerous states and by the major building code organizations in the United States. [Ex. 3-1074]

(2) It is the current design standard for ventilation systems in new, remodeled and renovated buildings in the U.S.

- The current ASHRAE Standard's effectiveness is supported in the published scientific literature and by IAQ field applications.
- The Proposed Rule recognizes ASHRAE Standard 62-1989 ("Ventilation for Acceptable Indoor Air Quality") as a "major ventilation guidance document available to HVAC

practitioners," but rejects explicit application of the Standard's ventilation rates to ETS in workplace venues.

- The Proposed Rule states: "[I]t can only be inferred that the standard [ASHRAE 62-1989] was mostly based on satisfaction of sensory comfort rather than based on the control of contaminants like ETS which may contribute to adverse health effects like lung cancer and heart disease." [59 FR 15992]
- However, the express purpose of ASHRAE Standard 62-1989 is to establish ventilation rates and procedures for various indoor settings in order to "control carbon dioxide and other contaminants with an adequate margin of safety and to account for variations among people, varied activity levels, and a moderate amount of smoking." [Ex. 3-1074]
- The precursor ventilation standard to ASHRAE Standard 62-1989, ASHRAE 62-1981, recommended two levels of ventilation, one for areas in which smoking was permitted, and another substantially lower rate for areas where smoking was prohibited.

(1) The prescribed ventilation rate in ASHRAE 62-1981 for offices in which smoking was permitted (20 cubic feet outside air per minute per person (cfm/person)) was 4 times



greater than the rate recommended for nonsmoking areas (5 cfm/person).

(2) IAQ problems were reported by those who followed the minimum (nonsmoking) ventilation rates specified in ASHRAE 62-1981.

(3) Research indicates that the ventilation rate for nonsmoking areas (5 cfm/person) is insufficient to efficiently dilute carbon dioxide and body odor, and that occupants under such conditions may complain of "stuffy" air.

- Other research indicates that a ventilation rate of at least 15 cfm/person, the minimum rate recommended by ASHRAE Standard 62-1989 and three times the rate recommended for nonsmoking areas by ASHRAE 62-1981, would be necessary and sufficient to disperse normally occurring ambient substances (e.g. CO<sub>2</sub>, body odors, etc.), as well as tobacco smoke. [Ex. 3-440]
- In recent testimony before a Congressional Subcommittee, Mr. John Janssen, the Chairman of the ASHRAE Project Committee for Ventilation Standard 62-1989, stated:

Prior to the oil embargo of 1973, buildings tended to be over-ventilated and indoor air

quality problems were not widely recognized. Ventilation recommendations for office spaces, for example, ranged all the way from 5 to 25 cubic feet per minute per occupant. In 1973, ASHRAE published the first edition of Standard 62, which allowed a minimum of 5 cfm of outdoor air per person for some applications. Most state and city building codes still reference ASHRAE Standard 62-1973, (Standard for Natural and Mechanical Ventilation.)

In 1981, the ASHRAE Ventilation Standard was revised to incorporate new technology and new awareness of such issues as tobacco smoke, which was not mentioned in the 1973 version. Research results (some ASHRAE sponsored) showed that the minimum ventilating rate of 5 cfm per occupant permitted under 62-73 would not adequately control occupant-emitted odors. At least 15 cfm per occupant was needed to reduce the odor level to a point acceptable to 80 percent of the people entering an occupied space. This amount of ventilation was found sufficient to control tobacco-smoke odor when the smoking rate is about today's average. [Ex. 3-1074]

- In ASHRAE's own submission to the RFI docket, Janssen writes:

ANSI/ASHRAE Standard 62-1989 is an authoritative guide for achieving acceptable indoor air quality. The Standard defines ventilation rates needed to achieve freedom from odor, irritation and create a comfortable indoor environment. As the only nationwide consensus-based technical standard on ventilation and acceptable indoor air quality, ASHRAE recommends Standard 62-1989 as the standard of choice for adoption by reference for state and local building codes and regulations. [Ex. 3-440]

- A number of respondents to the RFI endorsed the ventilation procedure specified in ASHRAE Standard 62-1989 and recommended its adoption as the basis to OSHA's Proposed Rule on IAQ.<sup>1</sup>
- Other respondents, including governmental and private IAQ investigators and mitigation experts, industrial hygienists and engineers, recommended use of the Standard for achieving acceptable indoor air quality.<sup>2</sup>

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1. (Law Associates, Ex. 3-1200; ENV Services, Inc., Ex. 3-1089; Organization Resources Counselors, Inc., Ex. 3-1084; the National Environmental Development Association's Total Indoor Environmental Quality Coalition (NEDA/TIEQ), Ex. 3-1054; Healthy Buildings International (HBI), Ex. 3-1053; Systems Applications International (SAI), Ex. 3-1052; U.S. Navy, Ex. 3-982; Stellmack Air Conditioning and Refrigeration, Ex. 3-978; Oklahoma Dept. of Labor, Ex. 3-945; Pennsylvania AFL-CIO, Ex. 3-908B; Duke Power Company, Ex. 3-860; American Association of Occupational Health Nurses (AAOHN), Ex. 3-803; American Federation of Government Employees, Ex. 3-529; ASHRAE, Ex. 3-440)
  2. (Meckler Engineers Group, Ex. 3-1081; Theodor D. Sterling & Associates (TDSA), Ex. 3-1073; Occupational Illness Support Group Local 12, Ex. 3-1017; R.J. Reynolds Tobacco Company (RJR), Ex. 3-1087; U.S. Navy, Ex. 3-982; Business Council on Indoor Air (BCIA), Ex. 3-933; Gershon Meckler Associates, Ex. 3-879; the Center for Environmental Assessment, Inc., Ex. 3-687; Sheet Metal and Air Conditioning Contractor's National Association, Inc. (SMACNA), Ex. 3-856; International Brotherhood of Teamsters, Ex. 3-858; Consolidated Edison Company of New York, Ex. 3-828; Caterpillar, Inc., Ex. 3-805; Philip Morris Companies, Ex. 3-1074; United Technologies, Ex. 3-651; Dow Chemical Company, Ex. 3-502; Thomas E. Glavinich, D.E., P.E., Ex. 3-498; Ford Motor Company, Ex. 3-447; Systems Applications International (SAI), Ex. 3-1052)

- One of the largest private IAQ diagnostic and mitigation firms in the U.S., Healthy Buildings International, Inc., writes that "ASHRAE Standard 62-1989, 'Ventilation for Acceptable Air Quality,' is perhaps the single most useful document we have in our efforts to communicate the proper practices for ensuring good indoor air quality in commercial buildings. We support its use, continued development and incorporation into future building codes, standards and IAQ legislation." [Ex. 3-1053]
- The submission to the OSHA RFI docket by Meckler Engineers Group states:

ASHRAE Standard 62-1989 is the only recognized authority that specifies the desired performance of building ventilation systems. . . . If OSHA decides that it is appropriate to regulate workplace IAQ at the national level, adoption of ASHRAE Standard 62-1989 would be the best strategy. [Ex. 3-1081]

- The EPA's submission to OSHA includes its handbook for remediation of indoor air quality problems. EPA's recommendations include: "Compare design air quantities to building codes for the current occupancy or ventilation guidelines [(e.g., ASHRAE 62-1989)], and compare ventilation rates to ASHRAE 62-1989."

- The handbook also recommends that it would be "informative to see how your ventilation rate compares to ASHRAE 62-1989, because that guideline was developed with the goal of preventing IAQ problems." [Ex. 3-1075 D]

\* \* \* \* \*

- Although the ASHRAE standard may change, the ventilation rates and design specifications as currently promulgated under ASHRAE 62-1989 represent the general type of ventilation approaches that are the mitigation of indoor air quality problems.

\* \* \* \* \*

- Whether or not the ASHRAE Standard is followed, adequate ventilation at rates similar to the rates now recommended by ASHRAE will help to address overall IAQ problems.
- In a 1991 publication, Thompson et al., described various retrofit projects for HVAC systems in 26 schools across the U.S.

(1) The retrofits followed the design specifications set forth in ASHRAE Standard 62-1989 for ventilation.

(2) The retrofits were, according to the authors, "very effective" at reducing radon and CO<sub>2</sub> levels in the schools.

(3) The authors also reported that "many of the occupants" believed that IAQ had improved. [Ex. 3-1074]

- The State of Wisconsin Safety and Building Division reports that, in their experience:

Almost without fail, . . . complaints are resolved by ventilating the offices or classrooms per state code. This is a provision of outside air (up to 20 cubic feet per minute) per person. . . . These ventilation requirements are supported by the American Society of Heating, Air-Conditioning, and Refrigerating Engineers (ASHRAE). [Ex. 3-10]

- Downing and Bayer recently reported results from more than 35 building IAQ investigations.

(1) They reported that the most "common source of IAQ problems has been the lack of proper operation and maintenance (O&M) of buildings."

(2) They further observed that "in more than 80 percent of the investigations to date, changes in building O&M significantly improve the perception of IAQ by the occupants."

(3) The researchers recommend, as part of their O&M procedure check list for indoor air quality, "to raise outdoor air ventilation to ASHRAE recommended minimums." [Ex. 3-1074]

- In 1991, investigators of the U.S. EPA's headquarters in Washington, D.C., reported that they were "unable to establish consistent relationships between major environmental parameters and self-reported health symptoms among the sampled employees."

(1) However, based on the number and frequency of complaints among workers in those buildings, the research group recommended that "an attempt to maintain indoor environment in accordance with the ASHRAE guidelines should be made." [Ex. 3-1074]

(2) In the lawsuit regarding IAQ in the EPA building, at the time of the IAQ problems, there were no allegations made in litigation regarding exposure to ETS.

\* \* \* \* \*

- While we are not recommending that OSHA adopt ASHRAE standards, we are recommending that OSHA consider ventilation

procedures and ventilation rates of the type presently contained in the existing ASHRAE standard.

- The ventilation rates in ASHRAE Standard 62-1989 specifically address ETS and have been proven effective in the dilution and removal of ETS constituents and the minimization of exposure to nonsmokers.

\* \* \* \* \*

- The effectiveness of ventilation of the type advocated in the existing ASHRAE Standard 62-1989 for the dilution of ETS constituents has been evaluated in a number of scientific studies that were submitted to the OSHA RFI docket.

(1) In 1990, researchers presented results of their work comparing the effects of increased ventilation recommended by ASHRAE 62-1989 in areas where smoking is permitted and in areas where it is prohibited. Through the aid of computer models, the researchers demonstrated that air quality in the areas where smoking is permitted does not differ significantly from air quality in nonsmoking areas, where both areas are supplied with outdoor air at levels recommended by ASHRAE 62-1989. [Ex. 3-1065]



(2) In their review of ETS-related air quality monitoring in different workplaces under various smoking conditions, researchers from TDSA Ltd. conclude "in office areas in which (a) smoking is allowed, and (b) outside air ventilation rates meet or exceed the ASHRAE ventilation standard, nicotine concentrations have typically been less than 5 ug/m and respirable suspended particle levels have ranged between 20 ug/m and 60 ug/m." [Ex. 3-1073]

(3) In their submission to the OSHA docket, scientists from HBI, Inc. summarized the results of a paper entitled "The Measurement of Environmental Tobacco Smoke in 585 Office Environments." [Ex. 3-1053] The authors write:

Computer analysis shows that when 'blindfolded' for presence or absence of smokers, in most cases realistic smoking levels do not significantly influence the aspects of air quality that were measured, and spill over from smoking areas into nonsmoking areas appears to minimal. This work further reinforces the position the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) has taken on ETS in office buildings in ASHRAE Standard 62-1989 (1989), that acceptable air quality can be maintained in properly ventilated offices with a moderate amount of smoking, even without smoker segregation.

(4) Professor Alan Hedge offers the following observation on the basis of his extensive experience in

monitoring ETS constituents during investigations of sick-building syndrome: "Our data show that modern ventilation systems are capable of diluting the small pollutant loads from smoking at the levels which we observe, without necessarily exposing nonsmokers to significant elevated levels of indoor air pollutants." [Ex. 3-955]

(5) Company scientists from R.J. Reynolds reported on a recently completed study of four office buildings. [Ex. 3-1087] Two of the buildings investigated had a policy of unrestricted smoking; in the other two buildings, smoking was restricted to separately exhausted lounges. Regardless of smoking policy, the study reports all ventilation and indoor air quality indicators were "well within applicable standards." The scientists reported:

In summary this study demonstrates conclusively (a) that with an HVAC system that is adequately designed, operated in accordance with current ASHRAE standards and properly maintained, all indicators for ETS are at extremely low, de minimis levels, even in the presence of substantial smoking activity, and (b) that such smoking activity has a negligible effect on contaminant levels in buildings where smoking is unrestricted. [Ex. 3-1087]

(6) The RJR scientists concluded:

RJR believes, based on its own detailed research and the consistent results of other workplace assessments, that a properly designed and maintained HVAC system that is operated in accordance with the ventilation rate procedures of the ASHRAE Standard 62-1989, will be effective in assuring that exposures to ETS will be de minimis.

(7) Based on their own case studies, the National Energy Management Institute (NEMI) acknowledges that exposure "to the odor caused by excessively high concentrations of ETS can be annoying to nonsmokers." NEMI suggests that "several avenues exist to address this problem. First and foremost is to apply the ASHRAE 62-1989 ventilation standard . . . [W]orkplaces operating in accordance with ASHRAE 62-1989 will not have ETS annoyance problems because the ventilation system will effectively remove all smoke." [Ex. 3-1183]

(8) In their comprehensive review of indoor air quality in non-industrial occupational environments, Morey and Singh write that "ASHRAE Standard 62-1989 is probably the most important document in the IAQ literature." [Ex. 3-505] They note:

It reflects a consensus reached since 1983 by knowledgeable individuals from engineering, industrial and academic groups. Janssen

points out that the ventilation rates recommended in Standard 62-1989 for the most part are similar to 'recommended' rates in Standard 62-1973 and to the rates recommended for smoking environments in Standard 62-1981.

A key feature of Standard 62-1989 and its ventilation rate procedure is the increase in the minimum outdoor ventilation rate from 5 to 15 cfm per person. Outdoor air requirements recommended by the ventilation rate procedure make no distinction between 'smoking-allowed' and 'smoking-prohibited' areas. A minimum of 15 cfm of outdoor air per person as specified in the ventilation rate procedure is recommended because new research indicated that this is the minimum amount of outdoor air needed to dilute body and tobacco smoke odors to acceptable levels. The outdoor air requirements specified in the ventilation rate procedure must be delivered to the occupied zone. Design assumptions with regard to ventilation rates and air distribution to the occupied zone are required by Standard 62-1989.

Standard 62-1989 also requires that the design documentation for a HVAC system state clearly which assumptions are used in design. This allows others to estimate the limits of the HVAC system in removing air contaminants prior to commissioning and prior to the introduction of new contaminant sources into the occupied space.

A key provision in Standard 62-1989 now requires that when the supply of air to the occupied zone is reduced (for example, in VAV systems), provision be made to maintain minimum flow rates of outdoor air throughout the occupied zone.

- OSHA's contention that ETS cannot be addressed through ventilation parameters (or indeed through its own Proposed Rule on IAQ and the proper operation and maintenance of

ventilation systems) is not supported in the scientific literature.

- OSHA's position contradicts well-accepted practice that demonstrates the effectiveness of ventilation parameters in addressing complaints about, and exposures to, ETS.
- A workplace that is ventilated according to OSHA's Proposed Rule on IAQ, i.e., for the reduction of levels of indoor substances associated with sick-building syndrome complaints, will also significantly dilute constituents of, and reduce and minimize exposures to ETS. Case reports and published scientific studies support this position.
- Moreover, OSHA's refusal to endorse ventilation procedures such as ASHRAE Standard 62-1989's ventilation rate procedures contradicts the specifications in its own Proposed Rule on IAQ, i.e., "that employers maintain and operate the HVAC system to provide at least the minimum outdoor air ventilation rate . . . required by the applicable building code . . . in effect at the time the facility was constructed, renovated and remodeled." [Emphasis added; 59 FR 16026]

- OSHA's denial that a general, ventilation-based standard for IAQ is also applicable to ETS forces OSHA to an unsupported, untenable and contradictory position.

\* \* \* \* \*

- Virtually every substance in the indoor air imputed to ETS by OSHA is also generated by other sources.
- In effect, OSHA argues that substance "X" can be addressed effectively through ventilation, unless precisely the same substance at precisely the same exposure level originates from ETS. [59 FR 15979-80, 15984, 15985, 15987-88] OSHA obviously has no basis for this position.
- OSHA's strategy regarding the alleged ineffectiveness of ventilation with relation to ETS is transparent.

(1) First, the position permits OSHA to pursue two separate lines of rulemaking for indoor air quality. This appears to satisfy the demand of Action on Smoking and Health (ASH), an anti-smoking organization, which seeks to force OSHA to separate ETS from the larger issue of IAQ and devote a regulation solely to workplace smoking. (See: ASH v. OSHA, 1992)

(2) The bifurcated rulemaking for IAQ and ETS also permits OSHA to give the appearance of satisfying the technological/economic feasibility argument for its ETS standard.

(3) A ban on smoking in the workplace, OSHA argues, will cost nothing, and the provision of a separately ventilated smoking area is "an option, not a requirement, under the proposed regulation." [59 FR 16013]

(4) On the other hand, if ETS were included among the ventilation-based provisions of OSHA's IAQ standard, the technological/economic feasibility of addressing ETS would become part of the overall IAQ standard, now estimated by OSHA to cost approximately \$8 billion.

(5) The technical and economic feasibility of dealing with ETS would then stand or fall with the entire IAQ standard, something OSHA appears unwilling to risk in its quest to completely "eliminate the nonsmoker's exposure to ETS." [59 FR 16016]

- OSHA also apparently recognizes that its specific recommendation to eliminate ETS in the workplace would not be supportable under a generic IAQ standard based on ventilation.

- A smoking ban or the restriction of smoking to an enclosed room, under a generic ventilation-based IAQ standard that included ETS, would result only in insubstantial and insignificant reductions in ETS exposures beyond basic (adequate) ventilation. The U.S. Supreme Court has determined that OSHA may only seek to eliminate "significant risks" and may not pursue the "regulation of insignificant risks." (See: API v. IUD, 64651)

\* \* \* \* \*

- We believe OSHA should pursue an overall approach to indoor air quality that emphasizes adequate ventilation.
- We believe that indoor smoking should be a part of the overall approach to indoor air quality and should be accompanied by an emphasis on adequate ventilation.
- OSHA's rulemaking on IAQ should provide employers with the latitude to work out smoking policies with employees in a manner best suited to their particular environment.
- These approaches are supported by practical experience, building investigation data, as well as the scientific data.



(1) Data establishes that actual nonsmoker workplace exposure to ETS is minimal.

(2) According to the scientific data, OSHA has failed to establish a significant risk of material impairment to worker health because of workplace exposure to ETS.

- We believe a policy of accommodating smokers and nonsmokers in the workplace is not only workable, but appropriate.

# ILLUSTRATIVE INDOOR SMOKING PROVISIONS

[These are illustrative provisions  
tendered for discussion purposes  
only and do not represent the  
views of any individual, company,  
or hearing participant.]

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Section .      INDOOR SMOKING.

A. Where indoor smoking is not already a subject of collective bargaining, employers who elect to permit indoor smoking shall establish a written policy regarding smoking.

B. In consultation with employees, through committee or otherwise, the indoor smoking policy shall be developed, reflecting the following:

1. Depending upon the configuration of the particular indoor workplace and employee preferences, the smoking policy may:
  - (a) permit smoking in common work areas and/or in private offices;
  - (b) require the simple separation of smokers and nonsmokers;
  - (c) establish physically separate smoking and nonsmoking areas; or
  - (d) restrict smoking to designated smoking areas.
2. For those indoor workplaces that are open to the public, the smoking policy may also address the preferences of smoking and nonsmoking customers.
3. The policy shall require that appropriate signs providing reasonable notice of the smoking policy and its requirements, are posted.

C. Employers who provide designated smoking areas shall adhere to the following:

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1. If smoking is restricted to designated smoking areas:
  - a. Smoking shall be allowed only in clearly posted, designated smoking areas;
  - b. The designated smoking areas shall operate with existing HVAC equipment at full capacity and, where practicable, under negative pressure with respect to adjoining indoor spaces; and
  - c. Separate exhausts from the designated smoking area may be utilized.
2. Designated smoking areas shall be adequately ventilated in accordance with applicable building codes and standards.
3. The employer shall periodically inspect the HVAC system serving the designated smoking areas to ensure that the system is operating as intended.
4. Nonsmoking employees may voluntarily enter designated smoking areas but they shall not be required, as a part of normal job responsibilities, to enter designated smoking areas which are established pursuant to this subsection.

5. The employer shall insure that cleaning and maintenance work is conducted in designated smoking areas only when smoking is not taking place.

D. Nothing in this standard shall be construed to:

1. Require an employer to provide a designated smoking area; or to
2. Prevent an employer from adopting a smoking policy in areas, facilities or workplaces not covered by this standard, or, in consultation with employees, from prohibiting smoking.